

Claims

1. A fuel cell comprising an anode, a solid electrolyte membrane and a cathode, wherein the solid electrolyte membrane is made of one or plural kinds of layered silicate minerals.

2. The fuel cell of Claim 1, wherein the solid electrolyte membrane is made of one or plural kinds of intercalation compounds which are produced by intercalating inorganic ions into the interlayer space of the layered silicate minerals.

3. The fuel cell of Claim 1, wherein the solid electrolyte membrane is made of one or plural kinds of intercalation compounds which are produced by intercalating organic ions into the interlayer space of the layered silicate minerals.

4. A method for fabricating a solid electrolyte membrane of one or plural kinds of layered silicate minerals and intercalation compounds of the layered silicate minerals for the fuel cells under a control of the density and impregnated liquid contents because a molecular sieve effect is brought into action.

5. A membrane-electrode assembly (MEA) consisting of a solid electrolyte membrane made of one or plural kinds of layered silicate minerals or intercalation compounds of the layered silicate minerals, and electrodes in which electron conductive particles showing a high catalytic activity are dispersed.

6. An electrochemical cell comprising: a membrane-electrode assembly (MEA) as set forth in Claim 5; and diffusion layers of porous material which also works as

a support member of MEA, an anode separator, a cathode separator and a water separator, which are arranged on the faces of MEA.

5 7. A fuel cell which operates with an organic fuel, comprising a combination of the electrochemical cells as set forth in Claim 6.

8. The fuel cell of Claim 7, wherein the organic
10 fuel is ethanol.

9. The fuel cell of Claim 7, wherein the organic fuel is methanol.

15 10. The fuel cell of Claim 7, wherein the organic fuel is natural gas (methane).

11. The fuel cell of Claim 7, wherein the organic
cell is liquefied petroleum gas (propane).
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12. The fuel cell of Claim 7, wherein the organic fuel is gasoline.

13. A fuel cell which operates with hydrogen,
25 comprising a combination of the electrochemical cells as set forth in Claim 6.